

Investigation of Colanic acid and Malonyldialdehyde in the Urine samples of patients with Hematuria

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Abstract

This study was carried out to estimate the concentration of colanic Acid in the urine samples obtained from 66 patients with hematuria , where (21) patients with microscopic hematuria , (32) patients with gross hematuria , and (13) patients with terminal hematuria . Also , (15) healthy individuals with no history of hematuria were included in this study as control group.

The results of this study showed that colanic acid was detected at high levels in (10) patients with microscopic hematuria and in (16) patients with gross hematuria where the results are above the control group (27 ± 9.0 and 18.0 ± 3.9 respectively) where as the urine samples of patients with terminal hematuria had normal levels similar to that in control group.

Malonyldialdehyde (MDA) was also estimated in the urine of patients with hematuria . The results of MDA were not significant although some patients showed high levels for this parameter in their urine samples.

Key words: Colanic acid , Hematuria , MDA .

الخلاصة

في هذه الدراسة تم تقدير حامض الكولانيك في عينات إدرار مأخوذة من 66 مريض بالتبول الدموي حيث كان (21) من المرضى يعانون من التبول الدموي غير الظاهري و 32 مريض يعانون من التبول الدموي الظاهري و 13 مريض من المصابين بالتبول الدموي النهائي كما تم جمع 15 عينة إدرار من أصحاء كسيطرة .

أظهرت النتائج ان حامض الكولانيك كان في اعلي مستواه في (10) مرضى من المصابين بالتبول الدموي غير الظاهري و في 16 مرضى من المصابين بالتبول الدموي الظاهري (27 ± 9.0) في حين لم تظهر أي زيادة في مستويات الحامض لدى المصابين بالتبول الدموي النهائي .

كما تم تقدير (MDA) في عينات الإدرار وقد أظهرت النتائج عدم وجود زيادة واضحة ومعنوية في مستويات الحامض لدى جميع المرضى.

الكلمات المفتاحية: حامض الكولانيك , مالونيل داي الدهايد , التبول الدموي

Introduction

The presence of blood in urine (hematuria) can originate from any site along the urinary tract and , whether gross or microscopic , may be a sign of serious underlying diseases including malignancy . (Buzza and Dagher,2001) .

Some biochemical parameters may be considered in some cases of hematuria , particularly in microscopic hematuria where blood in urine causes different types of urological cancers such as bladder and prostate cancer . (Mariani , *et al.*, 1989) .

One of the most common markers that would be helpful in diagnosis of bladder cancer is hyaluronic acid (HA) and hyaluronidase enzyme which have strong correlation in early diagnosis . (Wilmoth and Daley , 2007) .

Hyaluronic acid and its derivatives promote tumor cell adhesion and migration , where as its small fragments stimulate angiogenesis. Such small fragments are generated from degradation of this acid by hyaluronidase enzyme . (Likshasar, *et al.* , 1998) .

The aim of this study is to detect colanic acid which is a derivative of sugar acid hyaluronic acid in the urine samples of patients with hematuria .

Materials & Methods

I. Patients and urine samples collection :

Sixty sex patients with hematuria were included in this study who admitted Alhayat private lab. In Hilla Iraq. General urine examination was done to detect the presence of RBCs under the microscope .

Urine deposits were discarded , and the urine samples were kept in refrigerator at 4C⁰ to be ready for measurements of colanic acid and Malonyl dialdehyde .

II. Colanic acid measurements were estimated in urine sampled by carbamazole method , where standard curve was done by using different concentrations of galacturonic acid .The acid was expressed by a unit (mg/ ml) . (Dische and Shettles, 1951)

III. Malonyl dialdehyde was estimated in the urine samples according to Draper & Handely method (Draper , *et al .*, 1990) .

Results and discussion

In this study , (66) urine samples obtained from patients with hematuria are included (21) samples from patients with microscopic (gross) hematuria , (32) samples from patients with macroscopic hematuria and (13) samples from patients with terminal hematuria . Also , (15) urine samples are obtained from healthy individuals who have no history of hematuria .

Colanic acid is detected by using carbamazol method . It was seen that this acid is found at high conc. In (10) urine samples obtained from microscopic hematuria and (16) samples of patients with gross hematuria where as its level was low or absent in samples obtained from terminal hematuria (as shown in table 1)

Table (1) : Colanic acid value in the urine sample of patient with hematuria

Urine sample	No.	Colanic acid ± SD	Mean	P value
Microscopic hematuria (21)	10	27 ± 9.0 (10 patients)		0.432*
Macroscopic hematuria (32)	16	18.0 ± 3.9 (16 patients)		0.293*
Terminal hematuria (13)	12	0.97 ± 0.82 (12 patients)		0.01
Control (15)	15	0.061 ± 0.013		

However , the detection of colanic acid in the urine samples of patients with microscopic and gross hematuria may give an indicator that the patients were at risk of urinary bladder tumors (Wilmoth and Daley,2007 ; Lokshasar, *et al .*, 2006) .

These results are significant if compared with terminal hematuria where the results are not significant .

The source of colanic acid in the urine samples might come from many sources , one of these was hyaluronic acid which is considered as the main marker in urinary bladder carcinoma which might also correlate with interstitial cystitis (Bundix and Wauters , 1997).

The levels of colanate , a basic component of uroethial glycosaminoglycans are increased in tumor of urinary bladder or cystitis and are potentially useful as markers for monitoring such diseases (Gerald , *et al.* , 1979)

Malonyldialdehyde (MDA) , on other hand , was also investigated (Table 2) it was found that there was no increasing in MDA levels in the urine samples of the groups when compared to control group .

Table (2) :Malonyldialdehyde(MDA) value in the urine samples of patients with hematuria

Urine sample	MDA μ g /L	P Value
Microscopic	1.82 ± 1.08	0.001
Macroscopic	1.54 ± 0.92	0.001
Terminal	0.41 ± 0.19	0.001
Control	0.32 ± 0.10	

Some studies indicate that lipid peroxidation which is represented by Malonyldialdehyde levels , may increase in cases of urinary problems particularly in patients with renal failure, but the result of (Varizi , 2006) showed that there was no significance in the results of these patients ; However the same was found in this study but in the urine sample although some studies indicate that MDA may increase in the sera of patients with bladder cancer as a result of increasing of an energy utilization (Dubey, *et al.*, 2000 ; Vazin and Liang,1996) .

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